
The Effects Of Streching And Strengthening Exercise On Motor Cycle Gros Inchildren With Cerebral Palsy Spastic Type At Memorial Murni Teguh Hospital Medan 2023

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Abstract

Cerebral palsy (CP) Congenital malformasi: a condition of weakness of the extremities which results in distruption of the child's growth and development. The cause of cerebral palsy is the result of brain damage or brain defects which most often occur when a person is still in the womb or after birth, although there are several cases that experience CP is not congenital. This condition of congenital malformation has an unstable movement coordination system, floppiness or stiffness of the limbs, the emergence of abnormal movement, poor balance, or several combination of the signs that have been mentioned. Congenital malformation affects the motor and function capacity system. The aim of this is to find out that there is a stretching effec and strengthening exercise on gross motor skills in spastic type cerebral palsy. The type of research uses a quasi experiment with pre and post test design. The research sample is 7 children with spastic type cerebral palsy at Murni Teguh Hospital in Medan who meet the research criteria. The level of spasticity was measured by observation using the Mas method (Muscle Ashwort scale) with repeated measurements, before and after treatment. In research, data analysis this study used is T.Test (t test). From the results of the data analysis, it was found that the effects of stretching and strengthening exercise on gross motor skills in Cerebral Palsy patients at the Murni Teguh Hospital in Medan, there is an influence where the p value is below 0.05 which is meaningful or significant, The conclusion obtained from this research is that it was found that there was an influence of stretching and strengthening exercise on gross motor skills in children with spastic type cerebral palsy at Memorial Murni Teguh Hospital, Medan.

Keywords: *Streching Exercise, Strengthening Exercise, Cerebral Palsy, Fisioterapy*

INTRODUCTION

Cerebral palsy or known as disability from birth or congenital malformation is a condition that often occurs in cp children, due to damage that occurs in the immature brain so that it inhibits the growth and development of children. Based on the study of cerebral is part of the permanent disability of the brain and palsy is the weakness or weakness, helplessness that results, movement disorders associated with abnormal reflexes, floppiness or stiffness of limbs and bodies, abnormal posture, uncontrolled movements, unstable walking or some combination of the signs mentioned. The disruption of function in cerebral palsy patients results in impaired growth and development and has problems swallowing and generally has poor eye focus, where the eyes do not focus on the same object, can also experience problems in movement in several joints of the body due to muscle stiffness as a typical picture in cases of central nervous system problems or called muscle spasticity. Sanusi and Nara's statement that tofography of neromotor involvement can be classified as: describing the part of the body that is affected, resulting in the following names: monoplegi/monoparesis, diplegi/diparesis, hemiplegi/hemiparesis, paraplegi/paraparesis, triplegi/triparesis, double hemiplegia/double hemiparesis, tetraplegi/tetraparesis, quadriplegi/quadriparesis. A report from a study conducted in America, said that 2-3 babies per 1000 births suffer from cerebral palsy. Children with cerebral palsy experience problems in their brain function and in gross motor (gross motor) and fine motor (fine motor). Movement problems experienced such as: muscle stiffness, uncontrolled movements, contractures, and muscle weakness. Continuation of these movement problems can cause more problems in functional capacity such as limited standing, walking, playing, talking, and other activities. Through the role of physiotherapy, it is very necessary to overcome movement and functional problems, especially in gross motor skills such as stepping, walking, climbing stairs and jumping.

In brain injuries that cause cerebral palsy will affect motor function, the ability to control the body to perform desired activities. In spastic type cerebral palsy is characterized by increased muscle

tone. The classification of motor function provides a description of how the child's body is affected by the injured brain. Using motor function will provide parents, doctors, and physiotherapists with a very specific but broad description of the child's symptoms which helps medical professionals to choose treatments with the best chance of success against physiotherapy targets.

RESEARCH METHODS

The type of research is quasi experimental which is a designed experimental research. This designed experimental research is before and after treatment, the design carried out is a pre and post test design which is carried out by means of observation (measurements made in a repetitive manner, before and after treatment (Navel, 2012).

The purpose of this study was to determine the effect of stretching and strengthening on motor gros in spastic type cerebral palsy patients conducted at the Medical Rehabilitation Unit, Memorial Murni Teguh Hospital Medan in 2023, with a sample of 7 people.

The form of this study is as follows:

Before test Treatment After test

O1  T1  O2

Figure 1. Research design

Description:

O1 = First observation (Before test) of cerebral palsy patients

T2 = Treatment given with stretching and strengthening

O2 = Second observation (post test) on motor gros in patients with cerebral palsy type spastic

The reasons researchers choose locations are:

- The number of Cerebral palsy patients at Memorial Murni Teguh Hospital Medan allows for research
- The research location where the researcher works
- Data obtained from Memorial Murni Teguh Hospital Medan in 2021 the number of cerebral palsy patients is 70 people, in 2022 the number of cerebral palsy patients is 90 people, so it is possible to increase the number of cerebral palsy patients in May to November 2023 by 30 people.

Inclusion Capacity

Is the characteristics of examples that can be included or meet the criteria for research. The inclusion capacity in this study is:

- Patients willing to follow Physiotherapy actions in the Medical Rehabilitation Unit, Memorial Murni Teguh Hosital Medan during the study and sign an inform consent.
- Disciplined spastic type cerebral palsy patients with weakness in M.Quadricep Femuris, M.Gastrocnemius, M.Tibialis Anterior
- Patients with no other diseases other than spastic cerebral palsy.

Exclusion criteria

Cerebral palsy patients caused by tumors, cerebral palsy patients caused by accidents in capitis trauma, patients take other actions besides physiotherapy, patients are not disciplined in following physiotherapy actions at Memorial Murni Teguh Hospital Medan, patients suddenly get sick so they cannot continue physiotherapy actions at Memorial Murni Teguh Hospital Medan, patients are not cooperative.

Data measurement methods In the dependent variable: motor gros in cerebral palsy is measured by repeated observation and MAS (Muscleashwortscale) assessment, among others:

0 = no muscle contraction at all that is visible

1. slight increase in muscle tone muscle tone, characterized by the feeling of minimal resistance at the end of ROM flexion and extension movements
2. The increase in muscle type is more obvious, there is a stop of movement and followed by minimal resistance throughout the rest of the ROM, and the joint easy to move
3. The increase in muscle tone is very easily visible and noticeable throughout ROM, passive movement is very difficult to perform
4. The increase in muscle tone is very evident throughout the ROM, the joint is still easy to movement
5. Both the examined joint and the extremities experience stiffness when moved flexi or extension

RESULTS AND DISCUSSION

Quasi experimental data

The number of cerebral palsy subjects was 7 people with the average limb sapsticity score encountered in the sample around 1 to 4 (based on the Ashworth scale), namely:

1. = a slight increase in muscle tone, characterized by the feeling of resistance characterized by the feeling of resistance resistance at the end of ROM movement flexion and extension
2. = the increase in muscle tone is more obvious, when performed movements that movements that have greater ROM, but the affected part is more easier to move
3. = the increase in muscle tone is very easily visible and obvious throughout ROM, passive movement is very difficult to perform
4. =The increase in muscle tone is very evident throughout the ROM, the joint is still easy to movement
5. = Both the examined joint and the extremities experience stiffness when moved flexi or extension

Univariate analysis

Table: 2. Frequency distribution and mean leg strength before streching and strengthening.

<i>Responden</i>	<i>Mean</i>	<i>Median</i>	<i>S. Deviasi</i>
R1	4	4	1
R2	3.33	3	0.58
R3	2.67	3	0.58
R4	3	3	0
R5	2.67	2	1.15
R6	3	3	1
R7	3.67	4	0.58
Total		7	

Table:3. Frequency and mean distribution of leg strength after streching and strengthening exercise.

<i>Responden</i>	<i>Mean</i>	<i>Median</i>	<i>S. Deviasi</i>
R1	2	2	1
R2	1.33	1	0.58
R3	0.67	0.33	0.58

R4	1	1	0
R5	0.67	0	1.15
R6	1	1	1
R7	1.67	2	0.58
Total		7	

Table: 4 Paired sample t-test on the effects of stretching and strengthening before and after intervention on spastic type cerebral palsy children.

Jenis otot	Pre	Post
<i>M. Quadriceps</i>		
Mean	3.14	1.14
variance	0.8	0.8
<i>M. GAstoc</i>		
Mean	3.2	1.2
variance	0.9	0.9
<i>M. tibialis ant</i>		
Mean	3.14	1.14
variance	0.4	0.4
Total	7	

Bivariate analysis

Table:5. Distribution of f and mean leg muscle strength after stretching and strengthening exercise.

No. Nama otot	f (%)	kemaknaan
1. <i>M. Quadriceps</i>	7	0.5
2. <i>M. Gastroc n</i>	7	0.5
3. <i>M. Tibialis ant</i>	7	0.5
TOTAL	7 (100%)	

In the implementation of the data analysis research used is the T.Test (t test). That is, the sample groups that are compared have the same subject, in other words, the respondents who will be measured or examined are carried out 2 (two) times, namely pre (before) test and post test research or see the effect of stretching and strengthening exercise. Based on the results of the data analysis of the effects of stretching and strengthening exercise on motor gros in Cerebral Palsy patients at Memorial Murni Teguh Hospital Medan, there is an effect where the p value is below 0.05 which is meaningful or significant, it can be accepted that there is an effect of stretching and strengthening exercise on motor gros in spastic type cerebral palsy at Memorial Murni Teguh Hospital Medan in 2023.

Discussion

Musculus Quadriceps before stretching obtained results with 3.14 and post 1.14, in Musculus Gastrocnemius before stretching 3.2 and after stretching 1.2, M. tibialis before stretching 3.14 and after stretching 1.14. Based on the results obtained before and after there is a significant change where the range of results obtained variance value 0.4-0.9. Based on the results of statistical tests conducted (Haqia et al., 2022) there are changes made by exercise with core stability and neurosensorimotor reflex integrity assessments which are carried out for 3 weeks in children. These changes are carried out gradually for 2 times a week. The results of the data analysis test conducted by (Trisnowiyanto & Santoso, 2020), there is a significant effect carried out on children with Cerebral Palsy with the Functional Movement Ability of Children where the results obtained found a functional ability to move in progress, namely:

1. when supine lying and prone lying amounted to 5.1385 with $p=0.000$ ($\alpha<0.05$),
2. found functional ability sitting balance by 1.0254 with $P=0.000$ ($\alpha<0.05$),
3. found the functional ability of motion when crawling by 0.44 with $P=0.000$ ($\alpha<0.05$),
4. found the functional ability of motion Standing balance and gait training in progress by 0.6523 with $P=0.000$ ($\alpha<0.05$),
5. found the functional capacity of when running and jumping by progress by 0.32 with $P=0.000$ ($\alpha<0.05$).

In a literature presented with the title "The Effects of Kinesio Taping on Body Functions and Activity in Unilateral Spastic Cerebral Palsy: A Single-Blind Randomized Controlled Trial" states that kinesiotaping is an additional measure that can improve proprioceptive feedback and provide comfort in the movement space of the extremities, gross motor function and ADL (daily living activities) in CP children (Kaya Kara et al., 2015). The expected effect on the use of kinesiotaping provides evidence of being a therapeutic facility resource that can rehabilitate educationally and conventionally applied to movement disorders.

Physiotherapy has an important role in problems caused by congenital malformations, one of which is spasticity of the superior and inferior extremities, back (trunk) and other muscle tone. The selection of programs from physiotherapy modalities related to spasticity for infants or adults using massage (Salsabila et al., 2023)

There are several ways to overcome the problem of spasticity in the superior extremities and inferior extremities, namely using massage therapy, by direct contact to the surface of the skin by stimulating afferent receptors. When afferent receptors are stimulated, they will then be transformed to the spinal cord (along the vertebral column) which then goes to the cortical level, then there is a relaxing effect on the muscles. (Kumar and Vaidya 2014).

The implementation of physiotherapy with massage given to children with brain damage to the problem of spasticity is effective.

CONCLUSION

Based on the results of data analysis, the conclusions of this study are as follows:

1. There is an effect of stretching and strengthening exercise obtained on reducing the level of spasticity in spastic cerebral palsy type children.
2. There needs to be a regular daily visit to physiotherapy to maintain the existing muscle value does not decrease again and to maintain the flexibility of the muscles, and avoid stiffness of the muscles.
3. Stretching and strengthening can reduce tension and strengthen the muscle tone of M.quadrice, M.gastrocnemius, M.Tibialis in children with spastic type cerebral palsy at Memorial Hospital Murni Teguh Hospital Medan.

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